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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,385	03/26/2007	Karl-Ernst Hensger	HM-680PCT	6474
40570	7590	08/24/2010	EXAMINER	
Lucas & Mercanti LLP 475 Park Avenue South New York, NY 10016			YEE, DEBORAH	
			ART UNIT	PAPER NUMBER
			1793	
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			08/24/2010	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,385	<b>Applicant(s)</b> HENSGER ET AL.	
	<b>Examiner</b> Deborah Yee	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 25, 2010 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 to 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over machine-English translation of Japanese patent 09-241790 (hereafter "JP'790") alone or in view of US Patent 4,561,910 to Kato et al. ("Kato") and further in view of US Patent 3,533,261 to Hollander et al. ("Hollander") or US Patent 3,905,216 to Hinrichsen ("Hinrichsen").

4. The English abstract and claims 1 to 14 of JP'790 disclose a method for producing hot-rolled steel plate with a dual-phase microstructure consisting of at least 70 vol.% ferrite and a balance of martensite, comprising the steps of continuous hot rolling with a finish rolling temperature between 820°C and 900°C followed by a two-

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stage controlled cooling whereby cooling is performed from finish rolling temperature down to ferrite phase at 760°C to 600°C with a cooling rate at  $\geq 30^\circ\text{C/sec}$ , isothermal holding for 3 - 15 seconds, and then cooling down to coiling temperature  $\leq 200^\circ\text{C}$  at  $\geq 30^\circ\text{C/sec}$ .

5. The method of JP'790 teaches essentially the same steps as present invention with overlap in temperature and cooling rate ranges; and such overlap in ranges establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed ranges over the broader disclosure of the prior art since the prior art teaches the same objective to produce a dual-phase steel with at least 70 vol.% ferrite and a balance of martensite and exhibits a tensile strength greater than 600 MPa (see table 3).

6. More specifically, example A in tables 1 to 4 of JP'790 is processed according to A1 in same manner as claimed by Applicants comprising the steps of heating at 1200°C, hot rolling with a finishing temperature at 870°C, cooling from 870°C to 695°C, holding at 695°C for 5 sec and then cooling at 50°C/sec to 100°C to achieve a microstructure within the range of 70-95% ferrite and 30-5% martensite and exhibit a tensile strength greater than 600 MPa (equivalent to 62.3 Kg/mm<sup>2</sup>). In addition to example A, examples B to E also closely meet the recited claims for the same reason.

7. In regard to composition, the method of JP'790 uses a steel plate composition having constituents whose wt% ranges overlap those recited in claims except for Cr. The prior art Cr content has an upper limit of 0.30% which closely approximates Applicants' claimed lower Cr limit of  $>0.30\%$  such that one skilled in the art would have

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expected them to have the same properties in absence of evidence (e.g. by comparative test data) to the contrary. Hence a prima facie case of obviousness exists, see MPEP 2144.05(I).

8. On the other hand, Applicant's claimed ferritic-martensitic steel composition containing >0.3 to 1.2% Cr is well known in the art as evident by Kato in claim 3. Although the method of JP'790 does not teach using steel containing >0.3% Cr, such material would be obvious to incorporate since it is well within the skill of the artisan to modify method by using slightly different but analogous materials known in the metallurgical art such as the steel of Kato to produce no new and unexpected results.

9. The prior art method does not teach continuous casting but such step would be expected or obvious for one of ordinary skill to incorporate since it is conventional practice in the metallurgical art to continuous cast before continuous hot rolling and continuous cooling when making plate or strip.

10. In regard to claims 2 to 4, JP'790 in figure 1 teaches a cooling line which is installed after the last finishing stand and has several successive spaced water-cooling units for carrying out the method in accordance with the present invention wherein each water cooling unit contains water sprayers that are arranged to cool the upper and lower surface of the hot rolled steel plate.

11. Although each cooling unit having several sprays or last cooling unit having eight switchable valves for each four spray bars on the top and on the bottom as set forth claims 3 and 4 of the present application is not taught by JP'790, such difference would not be a patentable merit because selection of apparatus limitations would be a matter

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of choice and routine optimization well within the skill of the artisan to incorporate when a more accurately controlled cooling rate is so desired. Note that it is conventional practice in the metallurgical art to adjust cooling rate according to number and distribution of sprayers and water-adjusting valves, as evident by secondary references, Hinrichsen and Hollander.

12. In regard to claim 5, JP'790 teaches a cooling rate of  $\geq 30^{\circ}\text{C}/\text{sec}$  which overlaps with claimed cooling rate ranging from 50 and  $90^{\circ}\text{K}/\text{sec}$ . Also specific examples in table 2 of JP'790 teach cooling at 50 to  $60^{\circ}\text{C}/\text{sec}$  and are within the claimed range of 50- $90^{\circ}\text{K}/\text{sec}$ .

### ***Response to Arguments***

13. Applicant's arguments filed June 25, 2010 have been fully considered but they are not persuasive.

14. Applicant argued that steel of JP'790 contains at most 0.30% Cr whereas claim 1 of present application recites  $> 0.3\%$  Cr. Also JP'790 does not teach adjusting the ferrite content within the matrix to be between 70 and 95% with the remainder martensite. Applicant questions whether JP'790 teaches a microstructure that is close to the dual-phase steel according to the present invention since JP'790 teaches using a different alloy and is silent regarding the two-stage controlled cooling within the limits defined in section a) of claim 1. Applicant further argued that secondary references do not teach a two-stage cooling regime and therefore not combinable with JP'790.

15. In response to argument, it is the examiner's position that steel of JP'790 contains an upper limit of 0.3% Cr which is close enough to Applicants' claimed lower

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Cr limit of  $>0.3\%$  such that one skilled in the art would expect the same properties in absence of evidence (e.g. comparative test data) to the contrary. In addition, Applicants' steel composition is well known in the art as evident by Kato and it would be well within the skill of the artisan to apply slightly different but analogous steel to method of JP'790 such as the steel of Kato.

16. In regard to microstructure, tables 1 to 4 of JP'790 disclose specific examples that are processed by a 2-stage cooling process similar to present invention to produce a microstructure within the claimed ranges of 70-95% ferrite and 30-5% martensite and high tensile strength greater than 600 MPa.

17. In regard to Hinrichsen and Hollander, they are merely secondary references to show that it is conventional practice in the metallurgical art to adjust cooling rate according to number and distribution of sprayers and water-adjusting valves; and such adjustment would be obvious and well within the skill of the artisan to incorporate to the method of JP'790 for control cooling.

18. For the foregoing reasons, claims would not patentably distinguish over prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/  
Primary Examiner  
Art Unit 1793

/DY/